

**CPC****COOPERATIVE PATENT CLASSIFICATION****F25D****REFRIGERATORS; COLD ROOMS; ICE-BOXES; COOLING OR FREEZING APPARATUS NOT COVERED BY ANY OTHER SUBCLASS**

(refrigerated show cases [A47F 3/04](#); thermally-insulated vessels for domestic use [A47J 41/00](#); refrigerated vehicles, see the appropriate subclasses of classes [B60](#) to [B64](#); containers with thermal insulation in general [B65D 81/38](#); heat-transfer, heat-exchange or heat-storage materials, e.g. refrigerants, or materials for the production of heat or cold by chemical reactions other than by combustion [C09K 5/00](#); thermally-insulated vessels for liquefied or solidified gases [F17C](#); air-conditioning or air-humidification [F24F](#); refrigeration machines, plants or systems [F25B](#); cooling of instruments and comparable apparatus without refrigeration [G12B](#); cooling of engines or pumps, see the relevant classes)

**NOTE**

In this subclass, the following term is used with the meaning indicated:

- "device" means an enclosed space to be cooled; such devices being associated either with refrigerating machinery, e.g. in a refrigerator, or with other cold sources, e.g. in an ice-box.

Attention is drawn to Note (2) following the title of subclass [F24F](#).

**Devices not associated with refrigerating machinery****F25D 1/00****Devices using naturally cold air or cold water**

## F25D 1/02

. using naturally cold water, e.g. household tap water

**F25D 3/00****Devices using other cold materials; Devices using cold-storage bodies**

## F25D 3/005

. {combined with heat exchangers}

## F25D 3/02

. using ice, e.g. ice-boxes

## F25D 3/04

.. Stationary cabinets

## F25D 3/045

... {Details}

## F25D 3/06

.. Movable containers

## F25D 3/08

... portable, i.e. adapted to be carried personally

## F25D 3/10

. using liquefied gases, e.g. liquid air {(for cooling semiconductor devices [H01L 23/445](#))}

## F25D 3/102

.. {Stationary cabinets}

## F25D 3/105

.. {Movable containers}

## F25D 3/107

.. {portable, i.e. adapted to be carried personally}

## F25D 3/11

.. with conveyers carrying articles to be cooled through the cooling space

- F25D 3/12 . . using solidified gases, e.g. carbon-dioxide snow
- F25D 3/122 . . {Stationary cabinets}
- F25D 3/125 . . {Movable containers}
- F25D 3/127 . . {Stationary devices with conveyers carrying articles to be cooled through the cooling space}
- F25D 3/14 . . portable, i.e. adapted to be carried personally
- F25D 5/00                    Devices using endothermic chemical reactions, e.g. using frigorific mixtures**
- F25D 5/02 . . portable, i.e. adapted to be carried personally
- F25D 7/00                    Devices using evaporation effects without recovery of the vapour (butter or cheese dishes with cooling devices [A47G 19/26](#))**
- F25D 9/00                    Devices not covered by groups [F25D 1/00](#) to [F25D 7/00](#); Combinations of devices covered by two or more of the groups [F25D 1/00](#) to [F25D 7/00](#)**
- F25D 9/005 . . {using fluorinated halogenous hydrocarbons}
- Devices associated with refrigerating machinery**
- F25D 11/00                    Self-contained movable devices, e.g. domestic refrigerator**
- F25D 11/003 . . {Transport containers}
- F25D 11/006 . . {with cold storage accumulators}
- F25D 11/02 . . with cooling compartments at different temperatures
- F25D 11/022 . . {with two or more evaporators}
- F25D 11/025 . . {using primary and secondary refrigeration systems}
- F25D 11/027 . . {of the sorption cycle type}
- F25D 11/04 . . specially adapted for storing deep-frozen articles ([F25D 11/02](#) takes precedence)
- F25D 13/00                    Stationary devices, e.g. cold-rooms**
- F25D 13/02 . . with several cooling compartments, e.g. refrigerated locker systems
- F25D 13/04 . . the compartments being at different temperatures
- F25D 13/06 . . with conveyers carrying articles to be cooled through the cooling space
- F25D 13/062 . . {with refrigerated conveyers}
- F25D 13/065 . . {Articles being submerged in liquid coolant}
- F25D 13/067 . . {with circulation of gaseous cooling fluid}

- F25D 15/00**            **Devices not covered by group [F25D 11/00](#) or [F25D 13/00](#), e.g. non-self-contained movable devices**
- F25D 16/00**            **Devices using a combination of a cooling mode associated with refrigerating machinery with a cooling mode not associated with refrigerating machinery**
- Details or features of the devices covered by groups [F25D 1/00](#) to [F25D 16/00](#)**
- F25D 17/00**            **Arrangements for circulating cooling fluids; Arrangements for circulating gas, e.g. air, within refrigerated spaces**
- F25D 17/005            . {in cold rooms}
- F25D 17/02            . for circulating liquids, e.g. brine
- F25D 17/04            . for circulating air, e.g. by convection
- F25D 17/042            .. { Air treating means within refrigerated spaces (air conditioning in general [F24F](#))}
- F25D 17/045            ... {Air flow control arrangements}
- F25D 17/047            ... {Pressure equalising devices}
- F25D 17/06            .. by forced circulation
- F25D 17/062            ... {in household refrigerators}
- F25D 17/065            .... {with compartments at different temperatures}
- F25D 17/067            ... {Evaporator fan units}
- F25D 17/08            ... using ducts
- F25D 19/00**            **Arrangement or mounting of refrigeration units with respect to devices {or objects to be refrigerated, e.g. infra-red detectors}**
- F25D 19/003            . {with respect to movable containers}
- F25D 19/006            . {Thermal coupling structure or interface}
- F25D 19/02            . plug-in type
- F25D 19/04            . with more than one refrigeration unit
- F25D 21/00**            **Defrosting; Preventing frosting; Removing condensed or defrost water (removing ice or water from heat-exchange apparatus in general [F28F 17/00](#); heating arrangements specially adapted for transparent or reflecting areas [H05B 3/84](#))**
- F25D 21/002            . {Defroster control}
- F25D 21/004            .. {Control mechanisms ([F25D 21/006](#) takes precedence)}
- F25D 21/006            .. {with electronic control circuits}
- F25D 21/008            .. {by timer}

- F25D 21/02 . Detecting the presence of frost or condensate
- F25D 21/025 .. {using air pressure differential detectors}
- F25D 21/04 . Preventing the formation of frost or condensate
- F25D 21/06 . Removing frost ([defrosting cycles F25B 47/02](#))
- F25D 21/065 .. {by mechanical means}
- F25D 21/08 .. by electric heating
- F25D 21/10 .. by spraying with fluid
- F25D 21/12 .. by hot-fluid circulating system separate from the refrigerant system
- F25D 21/125 ... {the hot fluid being ambient air}
- F25D 21/14 . Collecting or removing condensed and defrost water; Drip trays
- F25D 23/00** **General constructional features ([F25D 21/00](#) takes precedence)**
- F25D 23/003 . {for cooling refrigerating machinery}
- F25D 23/006 . {for mounting refrigerating machinery components}
- F25D 23/02 . Doors; Covers ([F25D 23/08](#) takes precedence){locks or fastenings [E05B 65/0042](#)}
- F25D 23/021 .. {Sliding doors}
- F25D 23/023 .. {Air curtain closures}
- F25D 23/025 .. {Secondary closures}
- F25D 23/026 .. {for open-top cabinets}
- F25D 23/028 .. {Details}
- F25D 23/04 .. with special compartments, e.g. butter conditioners
- F25D 23/06 . Walls ([F25D 23/08](#) takes precedence; containers with thermal insulation [B65D 81/38](#))
- F25D 23/061 .. {with conduit means}
- F25D 23/062 .. {defining a cabinet}
- F25D 23/063 ... {formed by an assembly of panels}
- F25D 23/064 ... {formed by moulding, e.g. moulding in situ}
- F25D 23/065 .. {Details}
- F25D 23/066 ... {Liners}
- F25D 23/067 ... {Supporting elements}
- F25D 23/068 ... {Arrangements for circulating fluids through the insulating material}
- F25D 23/069 .. {Cooling space dividing partitions}
- F25D 23/08 . Parts formed wholly or mainly of plastics materials
- F25D 23/082 .. {Strips}

**NOTE**

[F25D 23/082](#) only.

- F25D 23/085 . . . {Breaking strips}
- F25D 23/087 . . . {Sealing strips}
- F25D 23/10 . Arrangements for mounting in particular locations, e.g. for built-in type, for corner type
- F25D 23/12 . Arrangements of compartments additional to cooling compartments; Combinations of refrigerators with other equipment, e.g. stove
- F25D 23/123 . . {Butter compartment}
- F25D 23/126 . . {Water cooler}

### **F25D 25/00 Charging, supporting, and discharging the articles to be cooled**

- F25D 25/005 . {using containers}
- F25D 25/02 . by shelves
- F25D 25/021 . . {combined with trays}
- F25D 25/022 . . {Baskets}
- F25D 25/024 . . {Slidable shelves}
- F25D 25/025 . . . {Drawers}
- F25D 25/027 . . {Rotatable shelves}
- F25D 25/028 . . {Cooled supporting means}
- F25D 25/04 . by conveyers (in general [B65G](#))

### **F25D 27/00 Lighting arrangements (in general [F21](#))**

- F25D 27/005 . {combined with control means}

### **F25D 29/00 Arrangement or mounting of control or safety devices**

- F25D 29/001 . {for cryogenic fluid systems}
- F25D 29/003 . {for movable devices}
- F25D 29/005 . {Mounting of control devices}
- F25D 29/006 . {Safety devices}
- F25D 29/008 . {Alarm devices}

### **F25D 31/00 Other cooling or freezing apparatus**

- F25D 31/001 . {Plate freezers}
- F25D 31/002 . {Liquid coolers, e.g. beverage cooler (receptacle coolers [F25D 31/006](#))}
- F25D 31/003 . . {with immersed cooling element}

- F25D 31/005 . {Combined cooling and heating devices}
- F25D 31/006 . {specially adapted for cooling receptacles, e.g. tanks}
- F25D 31/007 .. {Bottles or cans}
- F25D 31/008 .. {Drinking glasses}

## **F25D 2201/00      Insulation**

- F25D 2201/10 . with respect to heat
- F25D 2201/12 .. using an insulating packing material
- F25D 2201/122 ... of loose fill type
- F25D 2201/124 ... of fibrous type
- F25D 2201/126 ... of cellular type
- F25D 2201/1262 .... with open cells
- F25D 2201/128 ... of foil type
- F25D 2201/1282 .... with reflective foils
- F25D 2201/14 .. using subatmospheric pressure
  
- F25D 2201/30 . with respect to sound

## **F25D 2230/00**

## **F25D 2240/00**

## **F25D 2250/00**

## **F25D 2260/00**

## **F25D 2270/00**

## **F25D 2300/00      Special arrangements or features for refrigerators; cold rooms; ice-boxes; Cooling or freezing apparatus not covered by any other subclass**

## **F25D 2303/00**

- F25D 2303/08 . Devices using cold storage material, i.e. ice or other freezable liquid
- F25D 2303/081 .. using ice cubes or crushed ice
- F25D 2303/082 .. disposed in a cold storage element not forming part of a container for products to

- be cooled , e.g. ice pack or gel accumulator
- F25D 2303/0821 . . . the element placed in a compartment which can be opened without the need of opening the container itself
- F25D 2303/0822 . . . Details of the element
- F25D 2303/08221 . . . . Fasteners or fixing means for the element
- F25D 2303/08222 . . . . Shape of the element
- F25D 2303/08223 . . . . . having the shape of an ice cube
- F25D 2303/083 . . using cold storage material disposed in closed wall forming part of a container for products to be cooled
- F25D 2303/0831 . . . the liquid is disposed in the space between the walls of the container
- F25D 2303/0832 . . . the liquid is disposed in an accumulator pack locked in a closable wall forming part of the container
- F25D 2303/084 . . Position of the cold storage material in relationship to a product to be cooled
- F25D 2303/0841 . . . external to the container for a beverage, e.g. a bottle, can, drinking glass or pitcher
- F25D 2303/0842 . . . inside the beverage contained in a bottle, can, drinking glass, pitcher or dispenser
- F25D 2303/0843 . . . on the side of the product
- F25D 2303/0844 . . . above the product
- F25D 2303/0845 . . . below the product
- F25D 2303/0846 . . . around the neck of a bottle
- F25D 2303/085 . . Compositions of cold storage materials

## **F25D 2317/00**

- F25D 2317/04 . Treating air flowing to refrigeration compartments
- F25D 2317/041 . . by purification
- F25D 2317/0411 . . . by dehumidification
- F25D 2317/04111 . . . . Control means therefor
- F25D 2317/0413 . . . by humidification
- F25D 2317/04131 . . . . Control means therefor
- F25D 2317/0415 . . . by deodorizing
- F25D 2317/0416 . . . using an ozone generator
- F25D 2317/0417 . . . using an UV-lamp
- F25D 2317/043 . . by creating a vacuum in a storage compartment
  
- F25D 2317/06 . with forced air circulation
- F25D 2317/061 . . through special compartments
- F25D 2317/062 . . along the inside of doors
- F25D 2317/063 . . with air guides
- F25D 2317/065 . . characterised by the air return
- F25D 2317/0651 . . . through the bottom
- F25D 2317/0652 . . . through the corner
- F25D 2317/0653 . . . through the mullion

- F25D 2317/0654 . . . through the side
- F25D 2317/0655 . . . through the top
- F25D 2317/066 . . characterised by the air supply
- F25D 2317/0661 . . . from the bottom
- F25D 2317/0662 . . . from the corner
- F25D 2317/0663 . . . from the mullion
- F25D 2317/0664 . . . from the side
- F25D 2317/0665 . . . from the top
- F25D 2317/0666 . . . from the freezer
- F25D 2317/0667 . . . from the refrigerator
- F25D 2317/067 . . characterised by air ducts
- F25D 2317/0671 . . . Inlet ducts
- F25D 2317/0672 . . . Outlet ducts
- F25D 2317/068 . . characterised by the fans
- F25D 2317/0681 . . . Details thereof
- F25D 2317/0682 . . . Two or more fans
- F25D 2317/0683 . . . the fans not of the axial type
- F25D 2317/0684 . . . the fans allowing rotation in reverse direction

#### **F25D 2321/00**

- F25D 2321/14 . Collecting condense or defrost water; Removing condense or defrost water
- F25D 2321/141 . . Removal by evaporation
- F25D 2321/1411 . . . using compressor heat
- F25D 2321/1412 . . . using condenser heat or heat of desuperheaters
- F25D 2321/1413 . . . using heat from electric elements or using an electric field for enhancing removal
- F25D 2321/142 . . characterised by droplet guides
- F25D 2321/143 . . characterised by means to fix, clamp, or connect water pipes or evaporation trays
- F25D 2321/144 . . characterised by the construction of drip water collection pans
- F25D 2321/1441 . . . inside a refrigerator
- F25D 2321/1442 . . . outside a refrigerator
- F25D 2321/145 . . characterised by multiple collecting pans
- F25D 2321/146 . . characterised by the pipes or pipe connections
- F25D 2321/147 . . characterised by capillary, wick, adsorbent, or evaporation elements

#### **F25D 2323/00**

- F25D 2323/0011 . Means for leveling refrigerators
- F25D 2323/002 . Details for cooling refrigerating machinery
- F25D 2323/0021 . . using air guides
- F25D 2323/0022 . . using multiple air flows

- F25D 2323/0023 .. Control of the air flow cooling refrigerating machinery
- F25D 2323/0024 .. Filters in the air flow cooling refrigerating machinery
- F25D 2323/0026 .. characterised by the incoming air flow
- F25D 2323/00261 ... through the back bottom side
- F25D 2323/00262 ... through the back top side
- F25D 2323/00263 ... through the back corner side
- F25D 2323/00264 ... through the front bottom part
- F25D 2323/00265 ... through the front top part
- F25D 2323/00266 ... through the bottom
- F25D 2323/00267 ... through the side
- F25D 2323/00268 ... through the top
- F25D 2323/0027 .. characterised by the out-flowing air
- F25D 2323/00271 ... from the back bottom
- F25D 2323/00272 ... from the back top
- F25D 2323/00273 ... from the back corner
- F25D 2323/00274 ... from the front bottom
- F25D 2323/00275 ... from the front top
- F25D 2323/00276 ... from the bottom
- F25D 2323/00277 ... from the side
- F25D 2323/00278 ... from the top
- F25D 2323/0028 .. characterised by the fans
- F25D 2323/00281 ... Two or more fans
- F25D 2323/00282 ... the fans not of the axial type
- F25D 2323/00283 ... the fans allowing rotation in reverse direction
- F25D 2323/00284 ... Details thereof
  
- F25D 2323/02 . Details of doors or covers not otherwise covered
- F25D 2323/021 .. French doors
- F25D 2323/022 .. Doors that can be pivoted either left-handed or right-handed
- F25D 2323/023 .. Door in door constructions
- F25D 2323/024 .. Door hinges
  
- F25D 2323/06 . Details of walls not otherwise covered
- F25D 2323/061 .. Collapsible walls
- F25D 2323/062 .. Inflatable walls
  
- F25D 2323/121 . the refrigerator is characterised by a water filter for the water/ice dispenser
- F25D 2323/122 . the refrigerator is characterised by a water tank for the water/ice dispenser
  
- F25D 2325/00**
  
- F25D 2325/021 . Shelves with several possible configurations

F25D 2325/022 . Shelves made of glass or ceramic

F25D 2325/023 . Shelves made of wires

### **F25D 2327/00**

F25D 2327/001 . Lighting arrangements on the external side of the refrigerator, freezer or cooling box

### **F25D 2331/00**

F25D 2331/80 . Type of cooled receptacles

F25D 2331/801 .. Bags

F25D 2331/8011 ... to be carried on the back of a person

F25D 2331/8012 ... for cosmetics

F25D 2331/8013 ... for playing golf

F25D 2331/8014 ... for medical use

F25D 2331/8015 ... Pouches

F25D 2331/802 .. Barrels

F25D 2331/803 .. Bottles

F25D 2331/804 .. Boxes

F25D 2331/8041 ... for drinking

F25D 2331/805 .. Cans

F25D 2331/8051 ... for holding milk

F25D 2331/806 .. Dispensers

F25D 2331/807 .. Eggs

F25D 2331/808 .. Glasses

F25D 2331/809 .. Holders

F25D 2331/81 .. Pitchers

F25D 2331/811 .. Pour-throughs

F25D 2331/812 .. Trays

### **F25D 2400/00** **General features of, or devices for refrigerators, cold rooms, ice-boxes, or for cooling or freezing apparatus not covered by any other subclass**

F25D 2400/02 . Refrigerators including a heater

F25D 2400/04 . Refrigerators with a horizontal mullion

F25D 2400/06 . Refrigerators with a vertical mullion

F25D 2400/08 . Refrigerator tables

F25D 2400/10 . Refrigerator top-coolers

- F25D 2400/12 . Portable refrigerators
- F25D 2400/14 . Refrigerator multi units
- F25D 2400/16 . Convertible refrigerators
- F25D 2400/18 . Aesthetic features
- F25D 2400/20 . Carts specially adapted for transporting objects to be cooled
- F25D 2400/22 . Cleaning means for refrigerating devices
- F25D 2400/24 . Protection against refrigerant explosions
- F25D 2400/26 . Refrigerating devices for cooling wearing apparel, e.g. garments, hats, shoes or gloves.
- F25D 2400/28 . Quick cooling
- F25D 2400/30 . Quick freezing
- F25D 2400/32 . Removal, transportation or shipping of refrigerating devices from one location to another
- F25D 2400/34 . Temperature balancing devices
- F25D 2400/36 . Visual displays
- F25D 2400/361 . . Interactive visual displays
- F25D 2400/38 . Refrigerating devices characterised by wheels
- F25D 2400/40 . Refrigerating devices characterised by electrical wiring
  
- F25D 2500/00      **Problems to be solved****
- F25D 2500/02 . Geometry problems
- F25D 2500/04 . Calculation of parameters
- F25D 2500/06 . Stock management
  
- F25D 2600/00      **Control issues****
- F25D 2600/02 . Timing
- F25D 2600/04 . Controlling heat transfer
- F25D 2600/06 . Controlling according to a predetermined profile

**F25D 2700/00****Means for sensing or measuring; Sensors therefor**

F25D 2700/02

- . Sensors detecting door opening

F25D 2700/04

- . Sensors detecting the presence of a person

F25D 2700/06

- . Sensors detecting the presence of a product

F25D 2700/08

- . Sensors using Radio Frequency Identification (RFID)

F25D 2700/10

- . Sensors measuring the temperature of the evaporator

F25D 2700/12

- . Sensors measuring the inside temperature

F25D 2700/121

- .. of particular compartments

F25D 2700/122

- .. of freezer compartments

F25D 2700/123

- .. more than one sensor measuring the inside air temperature in a compartment

F25D 2700/14

- . Sensors measuring the temperature outside the refrigerator or freezer

F25D 2700/16

- . Sensors measuring the temperature of products